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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/555,641	10/02/2000	Tanweer Ahsan	07982.0002	1378

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Finnegan Henderson Farabow
Garrett & Dunner
1300 I Street NW
Washington, DC 20005

EXAMINER

TSOY, ELENA

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 02/13/2003

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/555,641

Applicant(s)

AHSAN ET AL.

Examiner

Elena Tsoy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 October 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 11.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on December 13, 2003 has been entered.

Specification

2. An abstract of the disclosure on a separate sheet filed on January 24, 2003 has been entered.
3. The disclosure is objected to because of the following informalities: "eg" throughout the specification including page 7, line 5, page 8, line 7, is suggested to change to -- e.g. --.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 recites the limitation "the inorganic particulate material " in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 1-5, 7, 9-12, 14, 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 9517441.

As to claims 1-4, 9-12, WO 9517441 discloses a method for treating a particulate material comprising particles of an alkaline earth metal carbonates such as calcium carbonate (See page 6, lines 27-33) which includes a step of exposing the particulate material to a treatment atmosphere containing a surface treatment agent comprising 1.0 –1.2 % of one or more C₁₂- C₂₀ fatty acids such as stearic acid (See examples 1-6), which coats the particles (See Abstract), wherein the treatment atmosphere is maintained at a temperature of 120-150⁰ C (above the melting point of the stearic acid) (See examples 1-6), wherein said particulate material is reduced to desired particle sizes by comminuting of naturally occurring carbonate minerals by wet process prior to treatment with said particulate material (See page 6, lines 35-37).

It is the Examiner's position that under elevated temperature of 120-150⁰C the fatty acids react with calcium carbonate forming a chemisorbed coating, as evidenced by GB 728698 (See page 1, column 2, lines 51-66, 78-80; page 2, column 1, lines 1-5).

It is the Examiner's also position that the treatment atmosphere in WO 9517441 is substantially free of water and the particulate material is dry because (1) WO 9517441 teaches that no dispersion is used (See page 5, lines 10-11) as opposed to prior art method which uses volatile solvent and, consequently, having solvent and moisture-eliminating step (See page 4, lines 26-31);

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and (2) because wet process in WO used for producing calcium carbonate of desired particle sizes from naturally occurring carbonate minerals is well known in the art and comprises grinding by a dry or wet process by mechanical means such as a crusher or various mills, classifying ground particles by air elutriation, hydraulic elutriation, etc., and further condensing and drying, as evidenced by Suzuki et al (US 4,298,652, column 4, lines 58-66) and Applicants (See specification page 8, lines 3-9, 23+). In other words, the treatment atmosphere in WO 9517441 is substantially free of water and calcium carbonate of WO 9517441 produced using “wet process” is dry calcium carbonate.

Although WO 9517441 teaches that the coating of one or more hydrophobic C₁₂- C₂₀ fatty acids renders the surface of (hydrophilic) particulate material hydrophobic so that the coated particulate material is *compatible* with hydrophobic organic polymers (See page 7, lines 20-26), WO 9517441 does not expressly show that at least 75 % (Claim 1) or at least 90 % (Claim 2) of the surface of the particulate material is covered by the chemisorbed coating; at least 80 % of the surface treatment agent deposited on the particulate material is chemisorbed (Claim 12) and the amount of physisorbed or unreacted surface treatment agent on the surface of the particulate material immediately after leaving the treatment atmosphere is not greater than 0.5 wt % (Claim 1) or 0.4 wt % (Claim 10) based on the dry weight of the particulate material; and the amount of the surface treatment agent in the treatment atmosphere is from 0.8X-1.2X where X is the theoretical minimum weight required to cover the surface area of the particulate material with a monolayer of the surface treatment agent (Claim 11). However, common sense dictates that the better hydrophobicity required, the more surface of the hydrophilic particulate material should be covered with a hydrophobic material, and maximum hydrophobicity would be achieved if 100% of the hydrophilic surface of the particulate material would react with a hydrophobic material in

such an amount as to form a monomolecular layer; and the amount of the hydrophobic material in excess to the monomolecular layer would be wasted adding cost to a process so that the amount of the surface treatment agent in the treatment atmosphere should be at least equal to the theoretical minimum weight required to cover the required surface area of the particulate material with a monolayer of the surface treatment agent. Thus, the amount of a hydrophobic material present in the treatment atmosphere, the amount of a chemisorbed surface treatment agent and the amount of physisorbed or unreacted surface treatment agent are result-effective variables in a coating process.

It is held that it is not inventive to discover the optimum or workable ranges of result-effective variables by routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). See also In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined the optimum values (including those of claimed invention) of surface coverage (hydrophobicity) or amount of a chemisorbed surface treatment agent and the amount of unreacted surface treatment agent in a method of WO 9517441 through routine experimentation depending on intended use of a final product.

As to claims 5, 14, 15, WO 9517441 further teaches that the particulate material, including naturally occurring carbonate minerals, has particle sizes in the range of 0.01-100 microns (See page 6, lines 21-26). However, WO 9517441 fails to teach that: (i) the surface area of the particulate material is in the range of 3-13 m²/g (Claim 5, 14, 15); and (ii) a behenic acid (C₂₂ fatty acid) is used for coating the particulate material (Claim 15).

As to (i), it is known in the art that naturally occurring calcite particles of 1 micron generally have specific surface area of approximately 10 m²/g, as evidenced by JP

02003393 (See Abstract). Therefore, particles of naturally occurring carbonate minerals in WO 9517441 having particle sizes in the range of 0.01-100 microns may have approximately surface area in the range of 0.1-1000 m²/g.

As to (ii), it should be noted that behenic acid is homologue of C₂₀ fatty acid.

Homologues are a class of compounds differing only by methylene linkages and possessing similar structures.

It is held that closely related homologs, analogs and isomers in chemistry may create a prima facie case of obviousness. In re Dillon 16 USPQ 2d 1897, 1904 (Fed. Cir. 1990); In re Payne 203 USPQ 245 (CCPA 1979); In re Mills 126 USPQ 513 (CCPA 1960); In re Henze 85 USPQ 261 (CCPA 1950); In re Hass 60 USPQ 544 (CCPA 1944).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a behenic acid (C₂₂ fatty acid) instead of C₂₀ fatty acid for coating a particulate material in WO 9517441 with the expectation of providing the desired hydrophobicity of particulate material in view of their closely related structures and the resulting expectation of similar properties.

As to claim 7, WO 9517441 further teaches that the particulate material is treated with one or more fatty acids in a high speed mixer (See examples 1-6).

8. **Claim 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 9517441 in view of JP 63078704.

As noted above, WO 9517441 teaches that a temperature of the treatment atmosphere in the high-speed mixer (a vessel) is adjusted and controlled within the range of 120-150⁰ C (See examples 1-6). However, WO 9517441 fails to teach whether the temperature of the treatment atmosphere is adjusted and controlled externally or internally.

JP 63078704 teaches that heat can be supplied externally to a mixture of a thermoplastic resin and a solid fine powder in a high-speed mixer to achieve and maintain a temperature above the melting point of the thermoplastic resin (See Abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have externally adjusted and controlled a temperature of a treatment atmosphere in the high-speed mixer (a vessel) of WO 9517441 with the expectation of providing the desired elevated temperature, since JP 63078704 teaches that a temperature above the melting point of a thermoplastic resin in a high-speed mixer can be achieved and controlled externally.

9. **Claim 13** is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 9517441 in view of Martin (US 4,251,432).

WO 9517441, as applied above, fails to teach that the amount of unreacted surface treatment agent is measured by thermogravimetric analysis.

Martin teaches that thermogravimetric analysis can be used for measuring the amount of bonded and non-bonded resin (reacted and unreacted surface treatment agent) on filler coated with the resin (See column 8, lines 20-30).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have measured the amount of reacted and unreacted surface treatment agent in WO 9517441 using thermogravimetric analysis since Martin teaches that thermogravimetric analysis can be used for measuring the amount of bonded and non-bonded resin (reacted and unreacted surface treatment agent) on filler coated with the resin.

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Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy whose telephone number is (703) 605-1171. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Elena Tsoy

Elena Tsoy
Examiner
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February 7, 2003